

WE CLAIM:

1. A method for providing a power monitoring service, comprising:
providing a monitoring unit at a power consumer site with connections to probes on individual power distribution circuits emanating from a power distribution and control panel of the consumer site;
providing an identification of at least one electrical load on each power distribution circuit in a circuit description table;
measuring a power consumption of each of the power distribution circuits using the corresponding probes;
communicating power consumption data related to the respective power distribution circuits to a power monitoring server that collects the power consumption data; and
analyzing the power consumption data to provide useful information to interested parties.
2. The method as claimed in claim 1 wherein the interested parties comprise any one of the power consumer, a power utility, a power producer, a power analyst, a power broker and a government agency.
3. The method as claimed in claim 2 further comprising providing a world wide web interface to permit the interested parties to access the power consumption information in accordance with a subscription

agreement between the power monitoring service and the interested party.

4. The method as claimed in claim 1 wherein communicating power consumption data comprises:

storing a measured power consumption of each of the power distribution circuits accumulated during a measurement interval phase; and

transmitting the stored power consumption data to the power monitor server during a data transmission phase.
5. The method as claimed in claim 1 wherein the step of analyzing further comprises using the power consumption information to compute a power consumption profile of the power consumer site.
6. The method as claimed in claim 1 further comprising using the power consumption information and the circuit description table associated with the power consumption sites, to compute an aggregate power consumption profile of at least one appliance.
7. The method as claimed in claim 6 further comprising comparing the power consumption information of the appliance and a power distribution circuit with the aggregate power consumption profile in order to identify actual power consumption differences between the appliance and a mean of power consumption of similar monitored appliances.
8. The method as claimed in claim 6 further comprising using the information related to power consumption of

one appliance over an interval of time, and the aggregate power consumption profile associated with the appliance, to identify a fault in the appliance.

9. The method as claimed in claim 1 further comprising providing the information related to power consumption of the power distribution circuits over an interval of time to a power utility so that the power utility may issue a per-circuit itemized bill to the electrical power consumer.
10. The method as claimed in claim 1 further comprising using the information related to power consumption of the power distribution circuits of a plurality of the power consumer sites, to permit the power utility company that provides electricity to the consumer site, to perform prospective studies.
11. A system for monitoring power consumption information relating to individual power distribution circuits of a consumer site, comprising:
 - a plurality of probes connected to respective ones of the power distribution circuits, each power distribution circuit being associated with a corresponding circuit description table that identifies at least one electrical load on the power distribution circuit;
 - a monitoring unit connected to the probes, the monitoring unit including at least one processor for receiving power consumption information measured by the probes, a memory for storing the power consumption information, and a communications link for transmitting the power

consumption information to a communications network; and

monitoring service equipment connected to the communications network for receiving the power consumption information, analyzing the power consumption information and making the analyzed power consumption information available to interested parties.

12. The system as claimed in claim 11 wherein each of the plurality of probes is a current probe.
13. The system as claimed in claim 12 wherein each of the at least one processor comprises a digital signal processor (DSP) for sampling the measured power consumption parameter values output by the current probes.
14. The system as claimed in claim 13 wherein each DSP samples each of a plurality of the probes in a cycle, so that a number of DSPs required is less than the number of power distribution circuits.
15. The system as claimed in claim 11 wherein the monitoring unit further comprises an interface for transmitting commands to a controller of at least one power consuming device, the interface and controller permitting the control of the device.
16. A system for monitoring power consumption information relating to individual power distribution circuits of a power consumer site, comprising:

- a plurality of probes connected to respective ones of the power distribution circuits, each power distribution circuit being associated with a corresponding circuit description table that identifies at least one electrical load on the power distribution circuit;
- a monitoring unit connected to the probes, the monitoring unit including at least one processor for receiving power consumption parameter values measured by the probes, a memory for storing the samples, and a communications link for communicating power consumption information to a remote centralized monitoring service; and
- a monitoring service server adapted to receive and store the power consumption information, and analyze the power consumption information to compute a power consumption profile of the individual power distribution circuits.
17. A system as claimed in claim 16 wherein the monitoring service server performs an analysis of power consumption at the power consumer site using the power consumption profile.
18. The system as claimed in claim 17 wherein the monitoring service server comprises a database for storing an aggregate power consumption profile computed using power consumption profiles and circuit description tables of other power consumers.
19. The system as claimed in claim 16 wherein the monitoring service server further comprises a world wide web site for selectively displaying the power

consumption profiles and aggregate power consumption profiles.

20. The system as claimed in claim 16 wherein the monitoring service monitors consumption information to detect anomalies respecting the power consumption of appliances connected to the monitored power distribution circuits.
21. The system as claimed in claim 16 wherein the monitoring unit further comprises an interface for transmitting commands from the monitoring service server to a controller of at least one power consumer site device, the interface and controller permitting the monitoring service server to instruct the controller to effect control of the device.